

MEMORANDUM

TO: [MIKE JOHNSTON ←
BOB CHIVVIS

FROM: STAN IT

ATTACHED IS A COPY OF OUR COMMENTS ON THE TWO
NORTH SLOPE PSD APPLICATIONS

State of Alaska

RECEIVED

DEC 17 1979

DEPT. _____ PERMITS BRANCH
DIV. _____ EPA - REGION 13
SEC. _____

DATE : 11 DEC 79

SUBJECT: ARCO-SOHIO PSD COMMENTS

USEPA REG



0000119

December 10, 1979

Mr. D. F. Dias
Environmental Engineer
Sohio Petroleum Company
Pouch 6-612
Anchorage, Alaska 99502

Dear Del:

Thank you for coming to Juneau to review the two North Slope PSD Permit Applications last Monday. As we discussed, most of the discrepancies are minor and the applications are quite well prepared. I apologize for the rather rushed meeting we had, and look forward to another opportunity to more thoroughly review with you the project's monitoring program and other issues of concern.

I have attached my comments on the productivity enhancement application. Most of these comments are, of course, applicable to the sea-water injection project application. A few additional comments specific to the second project are included.

My major concerns with the applications are:

- (a) the BACT discussion does not include sufficient information upon which to justify a determination;
- (b) the discussion in chapters 4 and 8, Appendix A, and the data presented in table 4-3 and figure 8-3, are inconsistent apparently due to confusion in wind direction terminology;
- (c) the estimates of NO_x emissions, description of plume dispersion and subsequent estimate of ground level concentrations are probably extremely conservative--not of particular concern at this time, but perhaps of great significance should EPA establish NO₂ short-term standards and increments.

Please call me if you have any questions about the attached comments.

Respectfully,

Stanley W. Hungerford
Environmental Engineer IV

Enclosure:

REVIEW OF APPLICATIONS FOR
PREVENTION OF SIGNIFICANT DETERIORATION PERMIT
ARCO-SOHIO NORTH SLOPE PROJECTS
SUBMITTED
28 SEPTEMBER 1979

The Alaska Department of Environmental Conservation's Air Quality Section has reviewed the documents entitled "PSD Permit Application for the Prudhoe Bay Unit Produced Water Injection, Low Pressure Separation, and Artificial Lift Projects" and "PSD Permit Application for the Prudhoe Bay Unit Waterflood Project," received October 25, 1979. These reports are thorough and quite well done, but a number of relatively minor inconsistencies should be clarified and minor questions answered. The only major inadequacy is the Best Available Control Technology discussion in Chapter 5. The information necessary to conclude that BACT has been selected was discussed at a meeting attended by S.W. Hungerford (ADEC), W.P. Metz (ARCO) and D.F. Dias (SOHIO), December 3, 1979.

A detailed list of comments follows--the sequence does not imply priority or relative importance. The first thirteen comments are based on the "PWI, LPS and AL" project document.

1. It would be helpful to present a table comparing the modeling results with appropriate standards in addition to the narrative in the Executive Summary.
2. The relationship between stack height and building dimensions on pages 3-4 and 3-6 can be misinterpreted. An elevation view of a typical building would clarify the paragraphs.
3. The flaring discussion on pages 3-8, 3-9 and A-1 is incomplete. The probability of flaring episodes, the relationship between flaring emissions and process equipment emissions and the net change in total facility emissions during flaring episodes should be presented. No BACT discussion was presented for assuring that emissions from the burning of the relatively "dirty" separator gas would be less than 20% opacity.
4. A footnote should be added to Table 4-2 explaining the higher CO levels at DS9, the "upwind" station.
5. The current monitoring data seems to agree quite well with the 1974/75 Pad E study and 1978 PSD application estimates. However CO and HC appear to be higher than previously measured/predicted by a factor of 10 to 100 or more.
6. The discussion in chapter 5 should be expanded to provide a complete foundation upon which to base a BACT determination. BACT is a case-by-case evaluation of emission control efficiency cost-effectiveness and environmental benefits. Therefore a comparison of energy generating processes, fuels, emission control efficiencies, estimated costs, emissions concentrations or impacts, and the cost effectiveness versus environmental impact of the next incremental increase in control efficiency (if any) should be presented for each pollutant.

- a. The pollutant emission concentration and control efficiency is not given for the selected "controls" section 5.1.
 - b. Is the data available from representative vendors showing support for the claim that NOx emissions will not exceed 150 ppm from the turbine classes described?
 - c. A comparison of costs and pollutant emission concentrations for oil and gas should be presented.
 - d. There is no quantitative information in section 5.2.2 to indicate costs of NOx control, efficiency and environmental impact. Employment of the burner controls may not be effective or yield environmental benefits commensurate with costs.
7. Since NOx emissions from turbines are limited by New Source Performance Standards, Table 6-1 should list allowable emissions for these units. The potential emissions of SO₂ from turbines in this table seem low when compared with allowable emissions. Allowable emissions are based on 150 ppm, equivalent to about 1% sulfur fuel. This table implies SO₂ emissions will be about 0.07 ppm, approximately 0.0005% sulfur fuel. Your own source tests hint that sulfur content may be 0.01%, although the concentration was near the limits of detectability.
 8. The existing source inventory in Appendix C contains a number of minor errors and a few minor new sources have been permitted since the 1979. The "area" emissions collectively listed as Downtown Deadhorse are not mentioned in sections 7.0 or 8.1.
 9. The display of ambient pollutant concentrations in Figure 8-3 shows the that impact of pollutant emissions will occur upwind of the new facilities. This merits considerable justification.
 10. If the Barter Island wind direction data were adjusted, would the alinement of proposed sources result in an increase or decrease in estimated ambient concentration? Refer to figures 4-2 and 4-3.
 11. In this document, it is stated that the culpable NOx sources are non-unit and contribute 95% of the maximum estimated 68 ug/m³. The previous application assigned 93% of the maximum 82 ug/m³ to Flow Station 2. This discrepancy should be discussed.
 12. In the discussion of ice fog, a clear differentiation should be made between visibility reduction due to ground level ice fog and possible interferences with air traffic by the elevated paths of condensed vapor plumes from the turbines.
 13. NOx emission data used for modelling seems to "conflict" with other data. On page B-5 an estimate of 5.9 lb. NOx/1000 HP-hr is said tube equal to the NSPS of 150 ppm. AP-42 lists 2.9 lb. NOx/1000 HP-hr for pipeline turbines, a 1976 A-class emission factor, and about 4 lb/NOx/1000 HP-hr for electrical plant turbines. Your own source tests appear to yield emissions of about 2 lb NOx/1000 HP-hr.

14. The seawater injection project totals 4674 tons NOx/year versus 22645 tons NOx/year from the other project, yet the maximum annual impact is 4.3 ug/m^3 vs only 6.1 ug/m^3 from the much larger project.
15. Why does the downwash calculation yield an impact from the Seawater Treatment Plant one fourth as great as that from Gathering Center 2 with both facilities containing almost the identical amount of new fuel burning equipment, 450 vs 443 mm BTU/hr?